

of water and filtered into two flasks. When cold, one of these was put out at 8.35. At 10.30 the temperature was  $35^{\circ}$ , and next morning at 8 A.M.  $31^{\circ}$ . The flask was now brought in and left on the mantle-shelf, where it remained some days exposed to dust, and it crystallized from loss of water by evaporation.

P.S. August 17, 1871.—I may mention that the suggestion made above, that in an open space far from houses the results would be still more perfect, has been realized by exposing in such a space supersaturated solutions of sodic sulphate and of alum in small shallow vessels, quite full, to the action of a strong wind under a cloudy sky, and they did not crystallize during half an hour's exposure; but the moment they were touched with the finger they became solid. Similar solutions were exposed in small open beakers in an open space during many hours, and at a temperature of about  $40^{\circ}$  F., without crystallizing.

VII. "Note on the Spectrum of *Encke's Comet*." By WILLIAM HUGGINS, D.C.L., LL.D., V.P.R.S. Received November 16, 1871.

I give the following observations of *Encke's comet*, and of the spectrum of its light, in the order of the dates of the evenings on which they were made.

Oct 17. The comet presented the appearance of a nearly circular faint nebulosity, in which no condensation could be certainly distinguished.

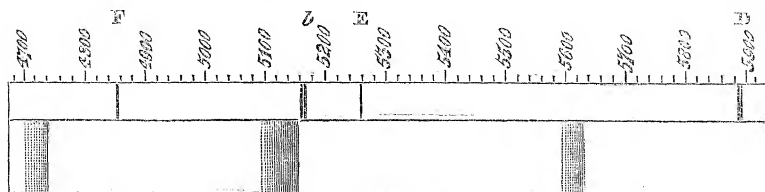
Nov. 7. By this time an important change had taken place in the appearance of the comet. There was now a strong condensation of light towards the east. The more condensed part of the comet, which was fan-shaped, was bounded on the eastern side by a tolerably defined contour, which approached in form to a parabolic curve. Surrounding this brighter portion of the comet was a much fainter nebulosity, of which the boundary on the eastern side appeared to form a line at right angles to the axis of the comet.

I suspected a very minute stellar nucleus just within the eastern extremity of the brighter condensed part, and to a small extent north of the comet's axis.

Nov. 8. The description given yesterday is applicable to the comet to-night. The brighter part appears more defined and in stronger contrast to the fainter outlying nebulosity. The nucleus is now visible with certainty. On the western preceding side of the comet, the side towards the sun, the cometary light becomes gradually fainter and more extended until it is lost to view.

On this evening the light of the comet was examined by the spectro-scope. The larger part of the light was resolved by the prism into a bright band in the green part of the spectrum. The band was defined at

its less refrangible limit, and gradually faded towards the blue. The micrometer gave 5160 millionths of a millimetre as the wave-length of the less refrangible boundary of the band. Two other bright bands were occasionally suspected; one of them appeared to be about two thirds of the distance from the bright band towards D, the other a little distance beyond F. No continuous spectrum could be detected. The nucleus was



probably much too minute and faint to give a continuous spectrum that could be seen.

No difference in the spectrum was seen when the slit was moved over the comet in different directions, as far as its feeble light permitted.

The spectrum of a hydrocarbon, giving the bands which appear to be due to carbon, was then reflected into the instrument, and observed simultaneously with that of the comet. The band in the green was found to be identical in position with the brightest of the bands of carbon, and to be similar in gradation of brightness from its less refrangible limit.

Nov. 9. The observations of yesterday were confirmed. The second more refrangible band, which was then caught only by glimpses, was found to be coincident with the third band in the carbon spectrum. The wave-length of the less refrangible limit was about  $4735^{\text{mm}}$ . The least refrangible of the three cometary bands could be seen only occasionally.

Nov. 12. The observations on this evening contain no new facts.

Nov. 13. To-night the nucleus appears as a minute, well-defined stellar point.

In the spectroscope the three bands are distinctly seen. The position in the spectrum of the least refrangible band corresponds with the first band of the carbon spectrum; it commences from the red, with a wave-length of about  $5632^{\text{mm}}$ .

Attempts were made with a double-image prism, a Nicol's prism, and a Nicol's prism combined with a Savart's system of plates to detect polarized light in the comet, but without success.

Nov. 14. The form of the comet remains nearly the same. The outlying nebulosity is now chiefly on the south of the axis of the comet. The nucleus appears to be precisely at the extreme eastern limit of the brighter, more condensed part of the comet.

The same spectrum was seen, but fog coming on interrupted the observations.

On this evening an attempt was made again to detect polarized light. A

double-image prism was placed between the eyepiece and the eye. The prism was brought into four different positions  $90^\circ$  apart. At each position of the prism an attempt was made to estimate the relative brightness of the two images. The power of the prism was just sufficient to give two images of the comet without their overlapping. The difference in brightness of the images was exceedingly small; I could not be certain that any appreciable difference really existed. However, I attempted in each case to select one of the two images as the brighter one. Afterwards I determined the position of the prism at the four different estimations, and I then found that three of the estimations were in accordance with a portion of the comet's light being polarized in a plane passing through the sun, and one in opposition to that supposition. I hesitate to attach any positive value to these observations; but they may perhaps be taken as showing that no considerable part of the comet's light is polarized.

The foregoing observations appear to show that the spectrum of this comet is identical with that of Comet II. 1868, a description of which I had the honour to present to the Royal Society\*.

It is worthy of notice that the cometary matter appears drawn out and diffused towards the sun, and that it has not yet come under the influence of the force, or been subjected to the conditions, whatever they may be, by which in most cases cometary matter appears to be powerfully repelled from the sun.

The observations were made with the telescope belonging to the Royal Society, of 15 inches aperture. The spectroscope contained one prism with a refracting angle of  $60^\circ$ , and the small observing telescope magnified six times.

*November 30, 1871.*

#### ANNIVERSARY MEETING.

General Sir EDWARD SABINE, K.C.B., President, in the Chair.

Dr. Blakiston, for the Auditors of the Treasurer's Accounts on the part of the Society, reported that the total receipts during the past year, including a balance of £127 9s. 3d. carried from the preceding year, and £706 17s. 2d. balance of the Oliveira bequest, amount to £5095 15s. 7d.; and that the total expenditure in the same period, including £518 2s. 10d. from the Society's funds to complete the payment for the Equatorial Telescope, amounts to £5169 13s. 2d., leaving a balance of £28 2s. 2d. in the hands of the Treasurer, and of £101 19s. 9d. due to the Bankers.

The thanks of the Society were voted to the Treasurer and Auditors.

\* Phil. Trans. 1868, p. 555 and plate xxxiii.